

HF3 S Relay

- Y-Design
- Frequency range DC to 3GHz
- Impedance 50Ω / 75Ω
- Small dimensions (15x7.6x10.6mm)
- 1 form C contact (1 changeover contact)
- Immersion cleanable
- Low power consumption ($\leq 140\text{mW}$)

Typical applications

Cable modems and linecards/ CATV, Tabs, measurement and test equipment ATE, satellite / audio / video tuners, wireless base stations and antennas, power stages



Contact Data

Contact arrangement	1 form C, 1 CO
Max. switching voltage	220VDC, 250VAC
Rated current	2A
Limiting continuous current, 23°C	2A
Switching power	60W, 62.5VA, 50W (2.5GHz)
Max. Continuous RF-Power, at 20°C., VSWR <1.2	100W @ 3GHz ¹⁾ 150W @ 2GHz ¹⁾
Breaking capacity max.	300W ¹⁾
Contact material	Ag, Au covered
Minimum switching voltage	100μV
Initial contact resistance	<100mΩ at 10mA/20mV
Operate time	typ. 3ms, max. 5ms
Release time	
without diode in parallel	typ. 2ms, max. 5ms
with diode in parallel	typ. 4ms, max. 6ms
Bounce time max.	typ. 1ms, max. 3ms
Mechanical endurance	10 ⁷ operations
1) with appropriate cooling only	

Coil Data

Coil voltage range	3 to 24VDC
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Coil versions, monostable

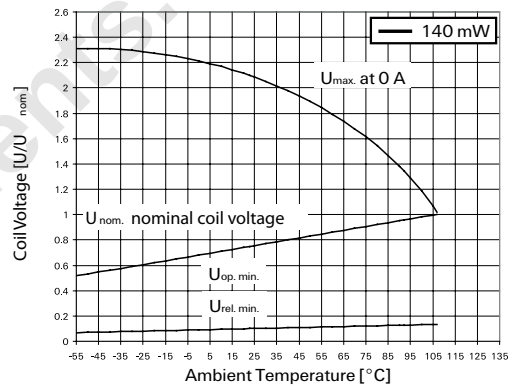
Coil code	Rated voltage VDC	Operate voltage VDC	Limiting voltage VDC	Release voltage VDC	Coil resistance Ω±10%	Rated coil power mW
50Ω version, monostable, 1 coil						
51	3	2.25	6.50	0.30	64	140
52	4.5	3.38	9.80	0.45	145	140
53	5	3.75	10.90	0.50	178	140
56	12	9.00	26.10	1.20	1028	140
57	24	18.00	52.30	2.40	4114	140

75Ω version, monostable, 1 coil

Coil code	Rated voltage VDC	Operate voltage VDC	Limiting voltage VDC	Release voltage VDC	Coil resistance Ω±10%	Rated coil power mW
01	3	2.25	6.50	0.30	64	140
02	4.5	3.38	9.80	0.45	145	140
03	5	3.75	10.90	0.50	178	140
05	9	6.75	19.60	0.90	574	140
06	12	9.00	26.10	1.20	1028	140

All figures are given for coil without pre-energization, at ambient temperature +23°C.

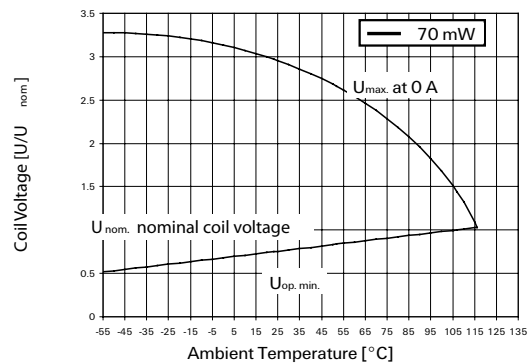
Coil Data (continued)



Coil versions, bistable

Coil code	Rated voltage VDC	Set voltage VDC	Limiting voltage VDC	Reset voltage VDC	Coil resistance Ω±10%	Rated coil power mW
50Ω version, bistable, 1 coil						
73S	5	3.75	15.30	-3.75	357	70
50Ω version, bistable, 2 coils						
91S	3	2.25	6.50	2.25	64	140
92S	4.5	3.38	9.80	3.38	145	140
93S	5	3.75	10.90	3.75	178	140
96S	12	9.00	26.10	9.00	1028	140
75Ω version, bistable, 2 coils						
41S	3	2.25	6.50	2.25	64	140
42S	4.5	3.38	9.80	3.38	145	140
43S	5	3.75	10.90	3.75	178	140
46S	12	9.00	26.10	9.00	1028	140

All figures are given for coil without pre-energization, at ambient temperature +23°C.



HF3 S Relay (Continued)

Insulation Data	50Ω version	75Ω version
Initial dielectric strength		
between open contacts	600V _{rms}	
between contact and coil	1000V _{rms}	
Initial surge withstand voltage		
between open contacts	1000V	
between contact and coil	1500V	

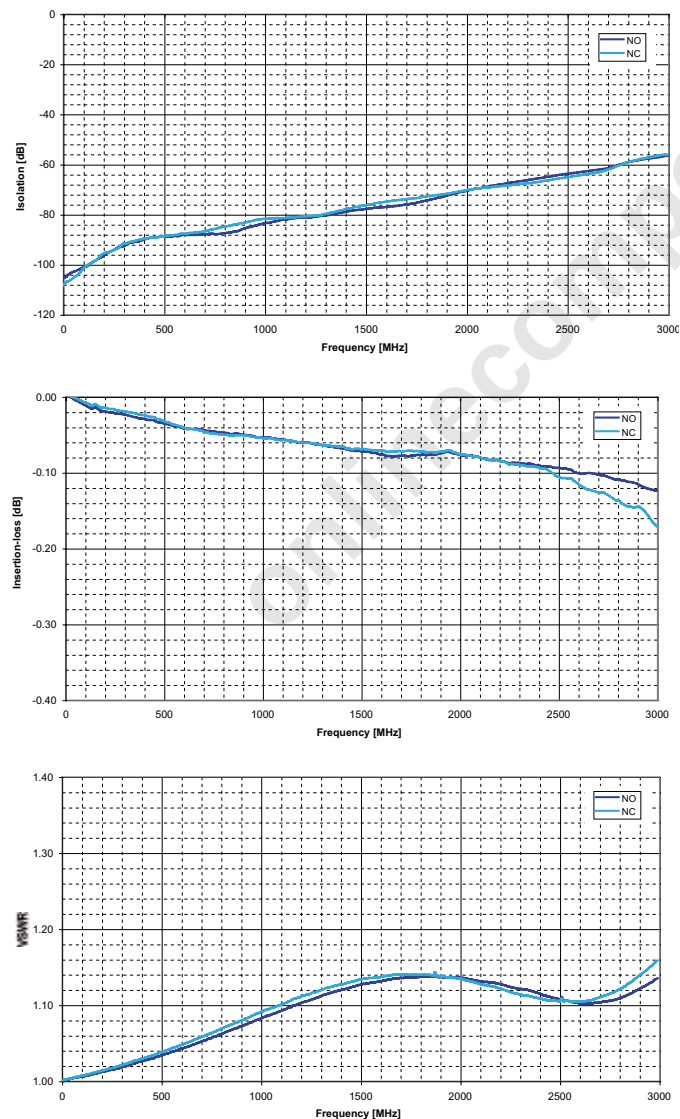
RF Data

Isolation		
at 100MHz/900MHz	-95dB/-80dB	-96dB/-80dB
at 3GHz	-55dB	-50dB
Insertion loss		
at 100MHz/900MHz	-0.03dB/-0.12dB	-0.03dB/-0.12dB
at 3GHz	-0.30dB	-0.30dB
Voltage standing wave ratio (VSWR)		
at 100MHz/900MHz/3GHz	1.05/1.10/1.25	1.05/1.20/1.30

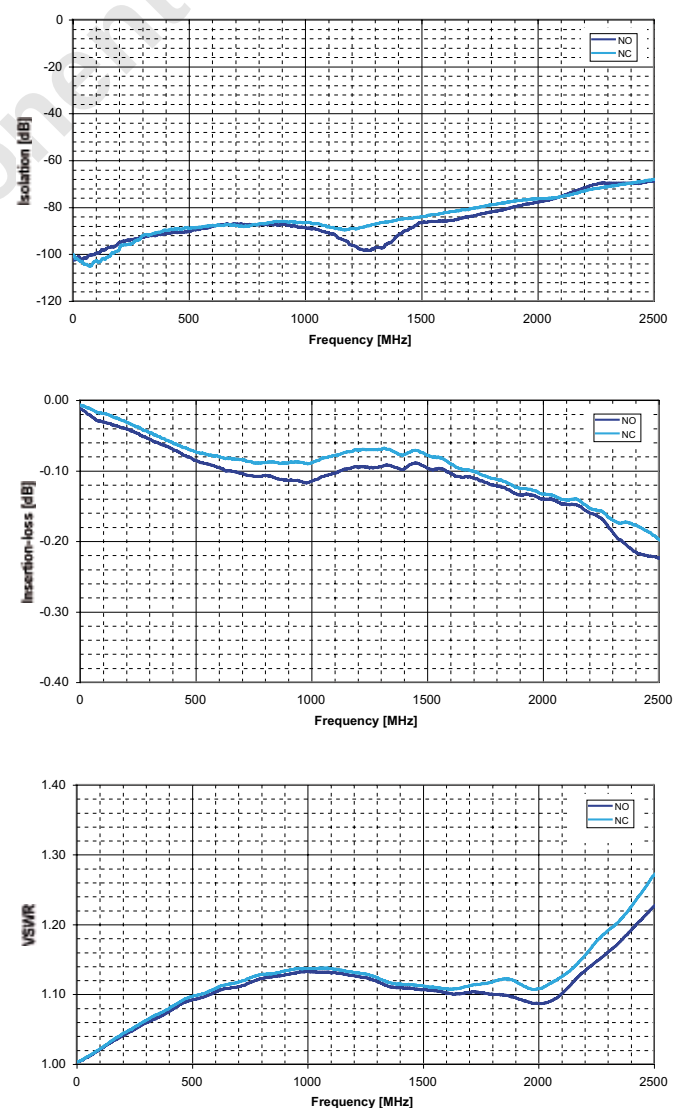
Other Data

Material compliance: EU RoHS/ELV, China RoHS, REACH, Halogen content	
refer to the Product Compliance Support Center at	
www.tycoelectronics.com/customer-support/rohssupportcenter	
Ambient temperature	-55°C to +85°C
Thermal resistance	<165K/W
Category of environmental protection	
IEC 61810	RT III - wash tight
Degree of protection, IEC 60529	IP 67, immersion cleanable
Vibration resistance (functional)	35g, 10 to 1000Hz
Shock resistance (functional), half sinus 11ms	50g
Shock resistance (destructive), half sinus 0.5ms	150g
Terminal type	SMT
Weight	max. 3g
Resistance to soldering heat SMT	
IEC 60068-2-58	265°C/10s
Moisture sensitive level, JEDEC J-Std-020D	MSL3
Ultrasonic cleaning	not recommended
Packaging/unit, SMT	reel/250 pcs., box/250 pcs.

RF performance, 50Ω version



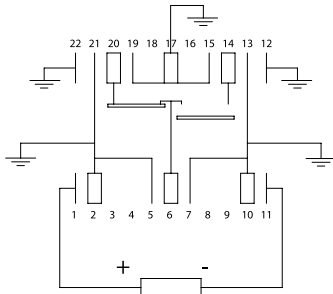
RF performance, 75Ω version



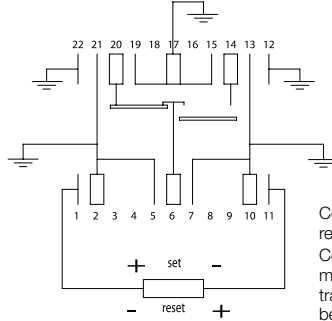
HF3 S Relay (Continued)

Terminal assignment

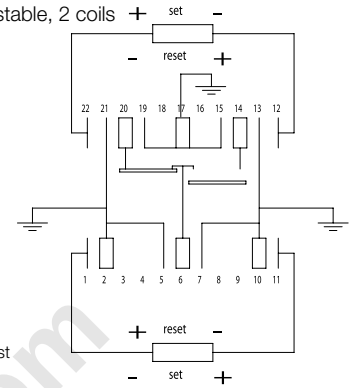
TOP view on component side of PCB
Monostable



Bistable, 1 coil



Bistable, 2 coils

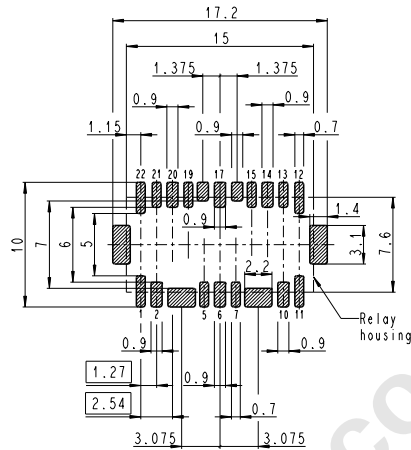


Contacts are shown in reset condition.
Contact position might change during transportation and must be reset before use.

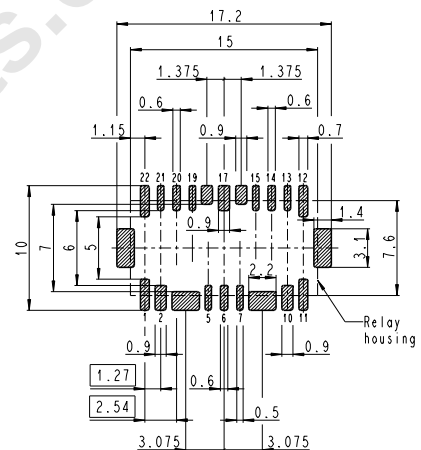
PCB layout

TOP view on component side of PCB

50Ω version

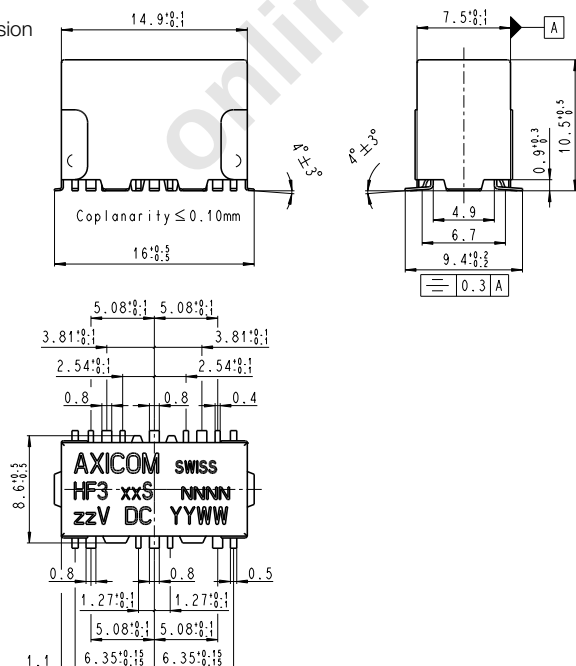


75Ω version

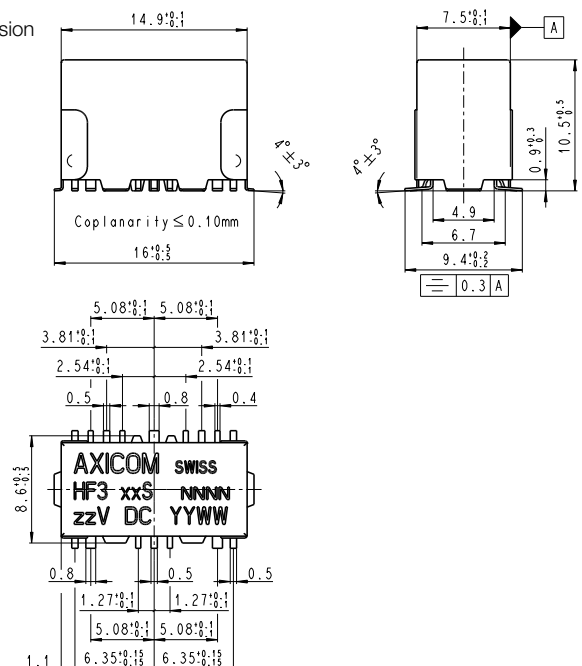


Dimensions

50Ω version

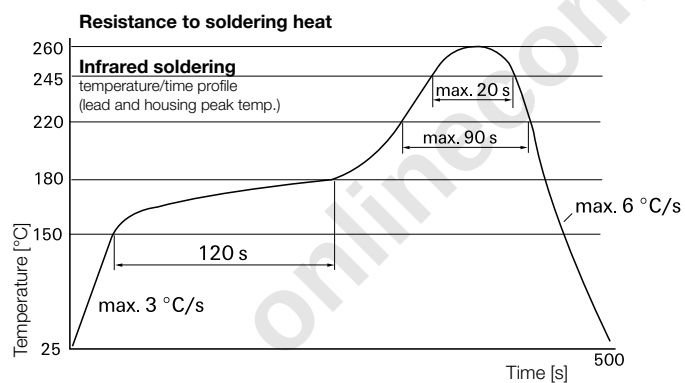
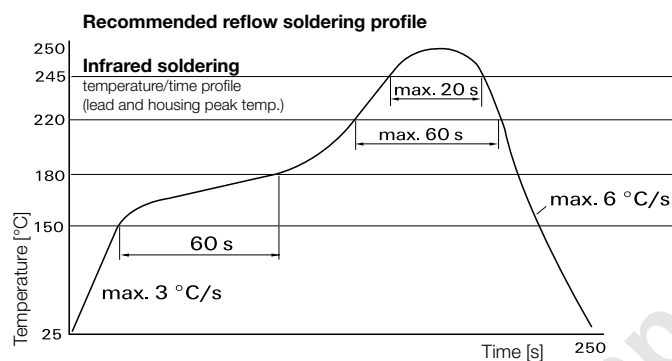
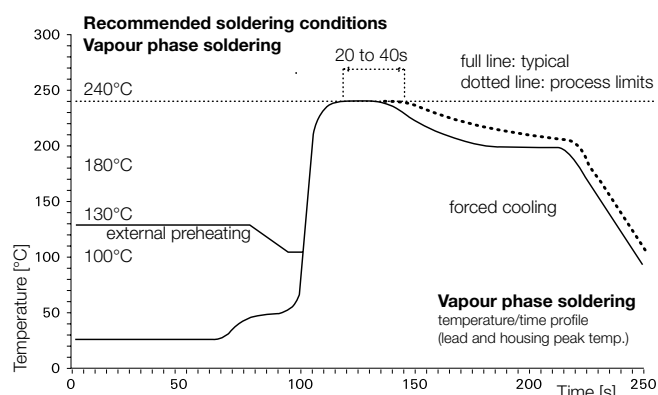


75Ω version

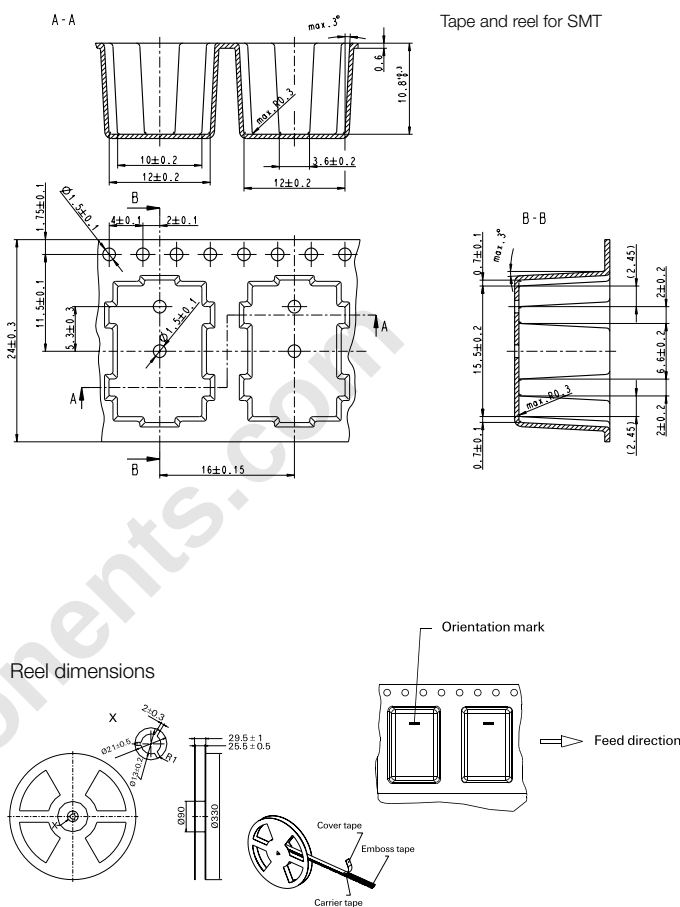


HF3 S Relay (Continued)

Processing



Packing



HF3 S Relay (Continued)

Product code structure

Typical product code **HF3 53 S**

Type		HF3 High Frequency Relays HF3S Series 1 form C, 1 CO	
Coil		Coil code: please refer to coil versions table Performance type 5x 50Ω version, monostable 1 coil 0x 75Ω version, monostable 1 coil 7x 50Ω version, bistable 1 coil 2x 75Ω version, bistable 1 coil 9x 50Ω version, bistable 2 coils 4x 75Ω version, bistable 2 coils	
Type		S High performance	

Product code	Arrangement	Version	Coil	Coil type	Part number
HF3 51S	1 form C (1 CO)	50Ω	3VDC	Monostable	3-1462051-0
HF3 52S			4.5VDC		2-1462051-8
HF3 53S			5VDC		2-1462051-3
HF3 56S			12VDC		3-1462051-1
HF3 57S			24VDC		2-1462051-2
HF3 73S	1 form C (1 CO)	50Ω	5VDC	Bistable 1 coil	2-1462051-7
HF3 91S	1 form C (1 CO)	50Ω	3VDC	Bistable 2 coils	3-1462051-2
HF3 92S			4.5VDC		2-1462051-5
HF3 93S			5VDC		2-1462051-4
HF3 96S			12VDC		2-1462051-6
HF3 01S	1 form C (1 CO)	75Ω	3VDC	Monostable	3-1462050-0
HF3 02S			4.5VDC		3-1462050-1
HF3 03S			5VDC		3-1462050-2
HF3 05S			9VDC		3-1462050-3
HF3 06S			12VDC		3-1462050-7
HF3 41S	1 form C (1 CO)	75Ω	3VDC	Bistable 2 coils	3-1462050-2
HF3 42S			4.5VDC		3-1462050-3
HF3 43S			5VDC		2-1462050-4
HF3 46S			12VDC		3-1462050-4